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A Dissertation
on Intermittent Fevers,
Submitted to
the examination
of the

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Intermittent fever is a disease characterized by an alternate succession of Paroxysms, and abatements of the Febrile State, or Apyrexia.

This disease has prevailed extensively for the last three years in the environs of this city, proving the cause of much distress among the poorer classes of society, who are principally liable to its attacks, from want of good clothing, diet &c, exposure to the cold, & night air.

I shall first consider the different Species & varieties of this disease, 2nd.ly The Symptoms; 3rd.ly The Prognosis; 4th.ly The appearances after death; 5th.ly The causes; & lastly, consider the treatment, & mode of cure.

1st. Of the Species & Varieties of Intermittent Fevers.

The Species of these fevers are three, viz, The Quotidian, Tertian, & Quartan fevers. In the Quotidian, the Paroxysm returns every day, in the Tertian, every third day, and in the Quartan, every fourth day. Authors enumerate besides these three species, several varieties of them

and though not often occurring, may as well be mentioned here, and are as follows — The Varieties of the Tertian fever, are 1st. Tertiana Duplex, having a paroxysm every day, with the alternate paroxysms alike; 2nd Tertiana Duplicata, having two paroxysms every 3rd day, & none on the intermediate day; 3rd. Tertiana Triplex, in which 2 paroxysms take place every third day, with one on the intermediate day also —

The Varieties of the Quartan are, 1st. Quartana duplex, which has a paroxysm on the 1st. & 2nd., but none on the third day; 2nd. Quartana duplicata with two paroxysms every 4th. day; 3rd. Quartana Triplex, having a paroxysm every day, with every fourth Paroxysm alike; 4th. Quartana Triplicata which has three paroxysms every 4th. day.

These are the chief varieties of importance in practice though some writers mention other, & Burserius says, that the Quotidian sometimes has two or even three paroxysms in the day, this however can-

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not be distinguished from a continued fever.

The paroxysms of a Quotidian fever recur in the morning, having the shortest cold fit, but on the whole, the longest paroxysm; those of the Tertian return at noon, and have a longer cold fit, than the Quotidian; but on the whole a shorter paroxysm; those of the Quartan have the longest cold fit, but a shorter paroxysm than either.

It ought also to be noticed, that these fevers have often a disposition to return annually.

2ndly Of the Symptoms of Intermittent fevers.

A regular paroxysm of an Intermittent is divided into three stages. The most striking symptom of the first stage, is a sense of cold, accompanied by shaking, thence called the cold stage; the second stage being characterized by an increased feeling of heat, is called the hot stage, and the chief symptom of the third stage is a copious secretion of per-

spiration, thence called the sweating stage.

Of the Symptoms of the Cold Stage.

This generally commences with a sense of languor and debility, frequent yawning & stretching, and aversion to food. The pulse is sometimes slower, and always weaker than natural, the face & extremities become pale, & shrink —. At length the patient feels very cold; a trembling begins, generally in the lower jaw, and gradually spread over the whole body. Sometimes the cold is confined to one or more of the limbs and at the same time the rest of the body glows with heat. After the shaking has continued some time, the patient still complaining of cold, the warmth of his skin, when measured by the thermometer, or by the feelings of another person, gradually increases. The pulse during this stage is small and frequent, often scarcely to be felt, and irregular — at the same time, the respiration becomes frequent and anxious, and sometimes the person is affected

with cough. The sensibility is often impaired, and in very severe cases, some degree of delirium or stupor comes on. Bilious vomitings also take place; the thirst is constant, the urine is almost colorless, & without sediment. Sometimes in the cold stage, the person complains of pains or numbness of the limbs, and very few cases occur without pain being felt in the head and back.

The length of this stage varies from half an hour, or even less, to four or five hours. Its mean duration is about one or two hours.

Of the Symptoms of the hot & Sweating Stages.

The cold and Shivering, after alternating for some time, with short fits of heat, gradually abate, and more permanent heat is at length diffused over the body accompanied by redness of the face, dryness of the skin, increase of thirst, pain in the head, throbbing of the temples, and tinnitus aurium. The pulse becomes regular, hard, and full, — The heat of the body often rises from 4 to 8 degrees above the natural temperature, the res-

spiration is fuller and more free, but generally more frequent and anxious than in health. The sensibility is morbidly increased, so that the patient cannot endure noise, or light, the headache becomes more intense and distressing, and in severe cases, delirium is induced. The urine becomes high coloured, but is still without sediment. Stools seldom occur, till the end of the paroxysm, when there is generally a loose stool. The nausea & vomiting abate, and generally go off on the approach of the sweat.

Hemorrhages often occur in the hot stage, and in cases of high action, & much excitement they are generally favorable. The hot stage is at length terminated by a profuse sweat, which generally begins about the head and breast, extending gradually to the back & extremities. The strength and frequency of the pulse abate, and the breathing becomes free. The urine deposits a lateritious sediment — the thirst abates, and the patient generally falls

into a sleep, from which he awakes free from fever, but still weak. These symptoms are not always equally well marked in every paroxysm. The cold fit is sometimes very slight, or even totally wanting, the hot fit sometimes precedes the cold, sometimes the hot and sweating stages appear together, and occasionally there is no sweating stage at all. very true

3rdly Of the Prognosis.

This may be divided into two heads, that of the paroxysm, and that of the Apyrexia.

Of the Prognosis in the Paroxysm.

Favorable symptoms are, when the paroxysm is short and mild; & when it recurs regularly. Deafness is mostly favorable. A free, thin, and universally diffused sweat at the close of the paroxysm, not occasioning much weakness, is also a favorable sign. Also a deposition of a lateritious sediment resembling red sand, in the urine, is very favorable, & in general, a sign of the solution of the disease. Unfavorable signs

— Startings and subsultus tendinum often terminate in general convulsions, in which the patient expires. Coma and delirium are unfavorable symptoms. False & depraved vision are amongst the worst of signs. Palpitations of the heart, & much anxiety are unfavorable, as is also a weak, frequent & irregular pulse. There is also danger in the opposite state of the circulation, which however, it is more in our power to controul. The respiration anxious and quick, interrupted with sighs and groans, occasionally intermitting and accompanied with hiccough, is very alarming. Changes of voice, & loss of speech indicate great danger. In the natural functions much nausea, the abdomen swelled, hard & painful to the touch, and obstinate costiveness are bad symptoms. A sodden, or parboiled tongue, or immoderately dry and black, or slimy and gelatinous, denotes much danger. Colliquative diarrhoea, & vomiting of dark matter, especially towards the end of the paroxysm, if it does not afford relief

is dangerous. The urine or sweat being very offensive, the former of a dark color, and depositing a dark or blackish sediment, the latter tinging the linen of a brown colour, are amongst the most alarming symptoms. Signs of debility are always symptoms denoting the greatest danger. Partial cold sweats, at the end of the paroxysms, are also very bad symptoms.

Prognosis in the Apyrexia.

Favorable signs are, when the intermissions are long, and recur regularly, especially if the paroxysm has been moderate, and the patient enjoys good health during the intermission without much loss of strength. The Tertian fever is the most frequent, and removed most easily; next to this is the quotidian, and lastly the quartan, which is the most intractable. When a paroxysm occurs, which without any evident cause is considerably more severe, than any that have preceded it, it often is the last, the patient remaining well after it. Death may take place at any period of Intermittent. It generally happens in the hot stage,

though, according to Sydenham, death takes place most frequently in the cold stage of the quartan fever. The patient rarely dies in the sweating stage. Death sometimes occurs in the intermission, in consequence of the violence of the preceding paroxysm. Indeed death from this disease alone, rarely occurs.

4th. Of the Morbid appearances on Dissection.

The Stomach, Intestines, Omentum & Mesentery are frequently found inflamed, or of a dark color, and sometimes sphacelated, the omentum and mesentery sometimes appear wasted, and in other cases, have tumours formed in them. The Gall bladder is often turgid, & much bile is sometimes found in the stomach and intestines. The liver is frequently indurated and enlarged, sometimes diminished and of a whitish color. In some cases, it seems gorged with blood, the vena portarum being much enlarged; in others it is tinged with bile. The pancreas is also found enlarged and sometimes ulcerated, but more frequently indurated. The spleen is generally

affected. It is often enlarged, & more frequently indurated; in this state, it has obtained the name of ague cake, being felt by the patient himself through the integuments of the abdomen. The mesenteric glands are also often found indurated. Traces of inflammation in the lungs and pleura often appear. The heart is also flaccid and enlarged, and the vessels of the lungs turgid with dark colord blood. Morbid appearances of the head are less frequently observed, however, traces of inflammation are now and then found, in the brain. If the patient has died in the cold fit, an accumulation of blood is observed in the internal parts.

5th. Of the Causes of Intermittents.

The most general cause, inducing Intermittents, is Marsh Miasma, which is the vapor or effluvia from marshes and swamps. Near stagnant ponds, more especially in hot weather, these fevers are often epidemic. Of late, however, Intermittents have appeared in several parts of the country round Philadelphia, in the dryest, and

most elevated parts, contrary to their usual origin.
The predisposing causes in general, are, a poor watery diet, great fatigue, long watching, grief, exposure to cold and damp night air, lying in damp rooms, or beds, sudden changes of weather, as from hot & dry, to cold & damp

6th. Of the Treatment.

The treatment of Intermittent may be divided into that of the paroxysm, and that of the Apyrexia, or Intermission. The former, is palliative only, and it is on the treatment during the apyrexia, or intermission, that we depend for the cure.

Of the Treatment during the Paroxysm.

There are two indications in the treatment of the paroxysm, 1st. during the cold stage to induce the hot, and 2nd. during the hot stage, to induce a free secretion by the skin. First, of the means to be employed during the cold stage. The patient should be put to bed & kept warm, by means of plenty of covering, hot bricks, bottles of warm water, or bags of salt or sand, applied to the

extremities and armpits. Warm cordial drinks, as Brandy & water; Opium also, which is of the greatest importance, should be given, Carbonate of Ammonia is also of much use, and if the stomach is much oppressed, an Emetic ought to be given, which is also one of the most effectual means of bringing on the hot stage. Indeed, if the disease is severe, an Emetic ought to be given before the cold fit has formed, as it often has the effects of stopping and preventing the approach of the cold stage. Bleeding is improper in the cold fit. When coma, or delirium is present, blisters may be placed on the back of the neck, or if these symptoms are very violent, the head may be shaved, and a large blister applied over it. Secondly — of the Means to be employed during the hot stage. During the hot stage, the patient's thirst is generally severe, and should be allayed by drinking moderately of cold liquids, and when a moisture appears on the skin, warm drinks should be used, as the infusions of the lighter aromatics, as Sage, or Balm &c. or of the mild Bitters

as Chamomile, Eupatorium Perfoliatum &c.
If during the hot stage, a vomiting and purging of bile occur spontaneously, diluents only are in general necessary, & when they fail, after most of the bile is discharged, Opiates must be had recourse to. Nauseating doses of the Antimon: Tartarizat: are very useful in reducing the force of the circulation. Opium also, when the patient is not plethoric, is found generally a powerful means of shortening the hot fit. It seems to act chiefly by promoting perspiration, and allaying the heat of the surface, & is best given in the form of Dover's powder. One of the best diaphoretics, however is the acetate of ammonia, or Minderer's Spirit. When an inflammatory diathesis is present, our efforts must be directed to remove this condition of the system. This may be accomplished by means of saline preparations as small doses of Sulphate of Soda, Nitrate of Potass, and Tartarized Antimony in nauseating doses, when the inflammatory symptoms are not urgent. But when the excitement is considerable,

more powerful means must be adopted. Bloodletting is therefore highly proper when the patient is plethoric & there is a full hard pulse, flushed countenance, & great determination to the head. This remedy ought to be confined to the hot stage, and in general, to the commencement of the disease. In cases of great prostration of strength, and when the system does not react, the body ought to be rubbed with Spirits of Turpentine, or Cayenne pepper & brandy. Sinapisms ought to be applied to the wrists & feet, — Opium & Cordials, as Carb: of Ammonia given internally will be found particularly beneficial.

this belongs to the treat of the cold stage

Of the Treatment during the Apyrexia.

It is generally adviseable to premise a Mercurial purge or an Emetic; — The most powerful remedy for curing this disease, is the Peruvian Bark. In cases of visceral obstructions the Bark has been objected to, but where no inflammatory symptoms exist, it ought to be employed; though in cases of local pain, & high action, it

is improper. In these cases recourse may be had to blisters over the region of the affected viscera, or to leeches applied to the part. Mercury may be given also advantageously as an alterative. Where the pain & inflammatory symptoms are very great, bleeding from the arm is proper. The most efficient mode of administering the bark, is in the state of fine powder, in doses of one or two drachms at short intervals viz. once in two hours. It may be given in wine, milk, molasses, or almost any convenient vehicle. According to the late Mr. Dallas, it is customary in the West Indies, to give one ounce in the morning at one dose, & no more during the day. Few stomachs however, will bear so large a dose, but cases may occur, in which this method may be advantageous. When the stomach cannot bear it in substance, we may use the infusion made with cold water, or extract, or essential salt, which may be given in doses of 10 or 12 grs every two or three hours. When the infusion is used, it is of advantage to combine with it an aromatic, as Ser-

pentaria, Orange peel, or Cloves. Such combinations answer particularly well in children, & persons of delicate habits. When the bark purges, Opium may be added to each dose; and when it produces constipation, add powdered Rhubarb. An excellent combination of the Bark is with an alkali an some aromatic, as carbonate of Potass: or Soda and Serpentaria, in the proportions of about ℥j of each of the two latter, to ℥j of the Bark. The annexed formula has been recommended by Dr. Saml. Jackson, of this city, as having succeeded, where the bark alone has been found of no service — Take of Bark ½ oz

Opiate confection 1 or 2 drachms

Lime Juice ½ oz

Citric acid 1 scruple

Port wine — ½ pint.

To be divided into 3 doses for an adult, to be taken 9 hours before the fit.

One of the most valuable forms however, of giving the bark, is that of the Sulphate of Quinine, which has been recently

discovered to be the active principle. It is in the form of very minute white crystals; the taste is a very and intense bitter — The dose is about 1 or 2 grains — 8 grains being supposed equal to one ounce of the best Bark. The chief advantage of this preparation, is the smallness of its dose, being on that account more likely to remain on irritable stomachs. It is exhibited in the form of pills of 1 or 2 grs each, in the same manner as the Bark, or in mixture made as follows viz

℞ Sulph. Quinine grs viij
Pulv: G. Arab: ʒj
Aq: Cinnamom: ℥ij M.

Dose a teaspoonful every 2 hours for an adult. —

The above mixture is objectionable, as the sulphate is very slightly soluble in cold water, & as it is only mechanically suspended in the liquid, on standing a few days it settles in a hard cake at the bottom of the vial, and cannot easily be diffused again. This may be prevented by adding to the mixture when first made

a few drops of Sulphuric acid, or the Elixir of Vitriol which renders the Sulphate soluble in cold water. This remedy cannot however be generally used in practice, on account of its high price.

In some instances, we cannot succeed in keeping the bark on the stomach, Injections of the bark may be then given, though this is a much less efficacious method. The external use of the Bark has also been recommended, but it cannot be depended on. It may however sometimes be of use in cases of children & delicate women, in the state of powder sewed into the clothes, and wrapped round the body. The decoction of Bark may also be used as a warm bath. This is sometimes used with advantage in cases of excessive vomiting. Arsenic — This is undoubtedly one of the most powerful means employed in this disease, of which we have the testimony of Dr. Fowler, who used it with great success. It answers better in persons of a plethoric habit, and more especially in children, as it is tasteless. Its effects are not

always uniform. In cases of Intermittents that shew a disposition to become Typhoid, Arsenic is improper, as its use is apt to bring on nausea & vomiting, & to increase the debility. This remedy is given in doses of 2 to 10 drops, once, twice or oftener in the course of the day, according to the age &c. of the patient, gradually increasing the dose. It ought not to be continued longer than ten or twelve days, as it is apt, when continued long, to bring on very unpleasant, and even dangerous symptoms. In cases in which the Bark has failed, conjoining Arsenic with it succeeds in curing the most obstinate intermittents. Another remedy in this disease is the Aristolochia Serpentaria, and in mild cases may be very useful. This is always a valuable addition to the Bark.

The Eupatorium Perfoliatum or Boneset, has been used with much success in this disease. It may be given in infusion hot, as a diaphoretic, & cold as a Tonic. It has been greatly used by country practitioners

who speak of it in very advantageous terms. The Centaury is also a popular remedy, and may be given like the Eupatorium. The Bark of the Cornus Florida, or Dog-wood, has also been employed with benefit, and may be given in doses &c, similar to the Peruvian bark. The Oak bark, the bark of the root of the Liriodendron Tulipiferum, have been used, and with success — The White Willow is also an indigenous plant, the bark of bark of which is occasionally useful in this disease. The Angustura Bark has been much extolled, & indeed is a very good substitute for the Cinchona when this latter cannot be obtained. It is given in rather smaller doses. Sometimes it has succeeded in the cure of agues, when the Peruvian Bark had failed. This article is very often useful in case of the stomach and bowels being irritable, & may often be retained in the stomach, when the Cinchona has been rejected. The Swietana Febrifuga was highly recommended a few years ago, but subsequent experience has proved

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it to be decidedly inferior to the Bark. Bitters have been used, and in cases of the bark failing, have been found frequently capable of curing this disease. Among the best of these are Quassia, Gentian, and Colombo, and ought to be given in cold infusion, or pills of the Extract of the two first articles. Kino is a remedy introduced by John Fothergill who spoke of it with enthusiasm. It has been much employed in this city; when used alone, it is incompetent to the cure of Intermittent Fever, But when combined with Opium & Bitters, it's powers are much increased, and may often succeed. The following is a good formula for exhibiting it viz — Kino ℥ij. Powd.d Gentian ℥ss. Opium 2 grains, mixed and divided into 12 powders, one to be taken every 2 hours. Charcoal is said to be a remedy of great power in this disease, especially when accompanied with dysentery. Sulphur is also of great utility in this complaint — it ought to be given

in doses of 30 or 40 grains every three or four hours mixed with water, Brandy, Molasses, &c taking care to prevent its affecting the bowels as a purgative Sulphate of Copper, when combined with Opium, in doses of ¼ grain of each three or 4 times a day — It has been declared by some Physicians to be equal to the Peruvian bark. Oxide & Sulphate of Zinc have been advantageously used in doses of 2 or 3 grains of either, three or 4 times a day. Alum has been found of service in doses of about 4 or 5 grs combined with nutmeg, 3 or 4 times a day — Sugar of Lead has been highly extolled by several physicians, & stated by some to be more successful than the Bark. This however is undoubtedly exaggerated. The Prussiate of Iron has been recommended by Dr Zollickoffer of Maryland, which accounts only partly confirmed in this city. Dose 6 or 8 grs three or four times in 24 hours. Oxide of Bismuth is in high repute in Germany — Dose

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4 or 5 grs 3 or 4 times a day. Oil of Turpentine has also been recommended. Black & Cayenne pepper have also cured this disorder. An important remedy, lately introduced, is the Spider's web; it ought to be sufficiently fresh & glutinous to make into pills of 5 grains — one of which may be given every 3 hours, in all the stages. It has an anodyne property, & is particularly recommended in case of Nervous irritability. The web of the black Spider ought to be employed. Animal Gelatin has been recommended in this disease by the French Physicians. Several respectable practitioners in England support this opinion. It was used by the former in the state of glue, & by the latter as Calves foot Jelly. It has been used with success. Any strong impression made on the mind, as that of horror, will often prevent the paroxysm. Swallowing a living Spider, and other things of this kind have been employed by the Vulgar & with success.

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Notwithstanding our numerous remedies, this disease will occasionally in spite of all, run its course — In such cases it becomes obstinate by habit. It is necessary here, gradually to introduce Mercury into the system, so as to produce moderate ptyalism. Blisters are in these cases a very useful auxiliary, applied to the extremities. Small bleedings, when the pulse is corded and full, & there is pain in some of the viscera, are often useful. It is of importance to cure this disease, as, when suffered to run on for a long time, it is apt to bring on other diseases, as Dropsy, Rheumatism Gout, Indurations of the Viscera, Hydrocephalus. After the disease is apparently cured, it is apt to return on the slightest change of weather, or exposure to cold. As a general rule, the remedies ought to be continued for one or two weeks after the disease has disappeared. The diet may in general be rich & good, especially in weak persons, but in plethoric cases the reverse plan must be had recourse to. Wine, broths, calves foot Jelly may be used, with exercise and warm clothing.